

Quantitative Research Methods II: ANOVA
16:300:515
Spring Semester, 2013

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- Office Hours: Mondays 2:30 pm. to 4:30 pm.
112 Paterson Street, Room 335
I'll also be available after our class meetings and by appointment. Feel free to send e-mail or call any time.
- Meeting Details: Classes will meet Thursdays from 4:50 to 7:30 pm. in room 112 of Murray Hall, College Avenue Campus. Please bring your textbook and all downloaded slides and handouts to class, including those from previous meetings.
- Questions during or outside of class are strongly encouraged.
- Prerequisite: Statistical Methods in Education I (15:291:531), Quantitative Research Methods in Education I: Introduction (16:300:511) or the equivalent.
- Texts and Materials: Keppel, G. & Wickens, T.D. (2004). *Design and analysis: A researcher's handbook* (4th edition). Upper Saddle River, NJ: Pearson Prentice Hall.
- I'll make additional readings and handouts available throughout the semester.
- All reading assignments should be completed by the day indicated in the course outline below.
- I have transcribed some of my notes into PowerPoint slides or other handouts that I'll make available as the semester progresses. You may find it useful to print each week's slides/handouts before class and use them for taking notes.
- I'll use the online tools at sakai.rutgers.edu to make files available to you and to post notices. Please make it a habit to check the site on a regular basis.
- Software: You'll need access to both Microsoft Excel (or the equivalent) and SPSS for homework assignments and for the take-home exam. Both are available for use in the GSE computer lab (room 208 of the GSE). Alternatively, you can obtain the IBM® SPSS® Statistics Standard GradPack from <http://www.studica.com> or other online retailers. It's best to get the latest version (V21), but any recent version will suffice.
- Overview: This course covers analysis of variance (ANOVA) and related procedures for analyzing experimental, and to a lesser extent observational, data. Elements of hypothesis testing and study design will also be covered. We'll take an applied approach to the material. As a result, no mathematical knowledge beyond basic algebra and introductory statistics is assumed or required.

Objectives

1. To develop the conceptual and statistical knowledge needed to analyze data from experiments.
2. To understand the assumptions and requirements behind ANOVA.
3. To learn about threats to internal validity and the means to prevent or limit them through proper design and analysis.
4. To develop the language and concepts necessary for interpreting and reporting results from experiments.
5. To gain facility with software that performs ANOVA.

Course Outline:

Date	K&W Chapter(s)	Topic(s)	Evaluation
1/24	1	Course Introduction; Statistics Review; Experimental Design	
1/31	2-3	Introduction & Single Factor Design	
2/7	2-3	Introduction & Single Factor Design, cont.	HW1
2/14	4	Planned Comparisons and Orthogonal Contrasts	
2/21	5	Trend Analysis	HW2
2/28	6	Planned Comparisons and Post Hoc Procedures	
3/7	7-8	Assumption Violations, Effect Size, and Power	HW3
3/14	10	Two-Way Factorial Design	
3/21		<i>Spring Break – No Class</i>	
3/28	NA		In-class exam
4/4	11	Factorial Design & Blocking	HW4
4/11	12	Main Effects and Interactions	HW5
4/18	16, 17	Single Factor Within-Subject Designs	
4/25	19, 20	Two-Factor Mixed Design	HW6
5/2		<i>Overflow</i>	Take-home exam due

Attendance: Your attendance at class meetings is very important (and expected), particularly because we'll meet only once per week. We'll learn quite a bit through in-class exercises, and the homework assignments and exams will reflect this. Please bring any necessary planned absences to my attention ahead of time.

Evaluation: Your performance in this course will be evaluated based on one in-class exam, one take-home exam, and a series of homework assignments:

In-class exam:	1/3
Take-home exam:	1/3
Homework assignments:	1/3

There will be 7 homework assignments. You'll have to complete 6 of them to get full credit. This gives you one "free pass". I recommend that you save it to use in case of illness or emergency or to give yourself a break at the end of the semester.

Homework must be turned in at the beginning of the class meetings at which they are due in order to receive full credit.

Policy on Academic Integrity

Please refer to the Policy on Academic Integrity for Undergraduate and Graduate Students at <http://teachx.rutgers.edu/integrity/policy.html>. I will follow this policy without exception.